DOCUMENT RESUME

ED 131 907 JC 770 017

AUTHOR Harris, William M.
TITLE A Faculty Load Nomograph.
NOTE 6p.

EDRS PRICE MF-$0.83 HC-$1.67 Plus Postage.
DESCRIPTORS Community Colleges; Educational Planning; Faculty Workload; Graphs; *Junior Colleges; *Mathematical Applications; *Measurement Instruments; Needs Assessment; *Personnel Needs; Ratios (Mathematics); Scheduling; *Teaching Load
IDENTIFIERS *Nomography; Weekly Student Contact Hours

ABSTRACT

Nomography, a branch of applied mathematics, deals with the graphical solution or nomograph of certain types of equations. This paper presents an example of nomography that has proven useful in calculating average weekly student contact hours (WSCH) per instructor, and that allows for rapid assessment of the maximum and minimum number of instructors needed to cover total departmental WSCH within a college's WSCH per full-time equivalent (FTE) instructor requirements. Using this nomograph, future staffing trends based on changes in faculty load requirements and increased or decreased departmental enrollments may be easily determined. While the nomograph contained in this document is designed for use within the Los Angeles Community College District, it can be quickly and easily adapted for use in other institutions which have WSCH/FTE ratios that differ from that of the Los Angeles Community College District. (Author/JDS)

****
* Documents acquired by ERIC include many informal unpublished *
* materials not available from other sources. ERIC makes every effort *
* to obtain the best copy available. Nevertheless, items of marginal *
* reproducibility are often encountered and this affects the quality *
* of the microfiche and hardcopy reproductions ERIC makes available *
* via the ERIC Document Reproduction Service (EDRS). EDRS is not *
* responsible for the quality of the original document. Reproductions *
* supplied by EDRS are the best that can be made from the original. *
****

ED131907

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

A FACULTY LOAD NOMOGRAPH

William M. Harris, Ph.D.
Coordinator of Instruction
Los Angeles Valley College

Nomography, a branch of applied mathematics, deals with the graphical solution or nomograph of certain types of equations. Nomographs are useful for solving a succession of nearly identical problems. The most common form the nomograph or alignment chart assumes is three straight or curved lines depicting values of the variables of a mathematical equation. The lines are drawn in a manner such that when a straight line connects the values of any two variables, the related value may be directly read from the third at the point of intersection.

This nomograph relating faculty load characteristics has proven useful in calculating average weekly student contact hours (WSCH) per instructor, in rapidly assessing the maximum and minimum number of instructors needed to cover the total departmental WSCH within the district's WSCH per full-time equivalent (FTE) instructor requirements. Using this nomograph, future staffing trends based on changes in faculty load requirements and increased or decreased departmental enrollments may be easily determined.

The standard faculty load (one FTE) for most disciplines in the Los Angeles Community College District is 450-600 WSCH for an instructor teaching 15 hours per week. WSCH is calculated by multiplying the number of hours a class meets per week by the number of students enrolled per class.

JC 770 017

As an example of how the nomograph is used, consider the following hypothetical department. The department has ten instructors. The department head and one other instructor are allotted three hours of reassigned time each for a total of 0.4 FTE; the department therefore has 9.6 FTE instructors. The total departmental WSCH is 4900 hours. To determine the average WSCH/instructor, draw a straight line intersecting 4900 total WSCH and 9.6 instructors. The average WSCH/instructor is approximately 560 hours (562.5 actual) read on the right vertical scale.

To establish the maximum and minimum number of instructors needed to cover the 4900 WSCH departmental load, draw straight lines connecting 4900 hours with 600 WSCH/instructor and with 450 WSCH/instructor. The minimum number of instructors is seen to be 9 and the maximum 12 read on the diagonal scale. Of course, the maximum and minimum figures only represent mathematical possibilities, as they would include instructors teaching more or less than a FTE load and do not take into account logical scheduling patterns.

As a tool for predicting staffing trends as determined by changes in load requirements, consider the following case. It is proposed by a teacher organization to lower the WSCH/instructor to 300 WSCH. How many instructors would be needed by the department to absorb the reduction in WSCH requirements? Draw a straight line from 4900 hours to 300 WSCH/instructor. The line intersects at 18 instructors on the diagonal scale, indicating a departmental increase of faculty of 80%.

The relationship of the faculty load characteristics is: number of instructors x average weekly student contact hours per instructor = total departmental weekly student contact hours, which is of the form $f_1(u) = f_2(v) \cdot f_3(w)$. The simplest nomograph construction was a Z chart using normal coordinates. The form of the equation is also soluble utilizing logarthrimic coordinates with three parallel scales, but with attendant mechanical drawing problems. A circular nomograph could also be used to solve the equation.

REFERENCES

Levins, A. S., 1959, Nomography (2nd Ed.), John Wiley & Sons

Van Voorhis, M. G., 1937, How to Make Alignment Charts, McGraw Hill.

Lipka, Joseph, 1918, Graphical and Mechanical Computation, John Wiley & Sons.

Giesecke, F. E., A. Mitchell, and H. C. Spencer, 1967, Technical Drawing (Chapter 27--"Alignment Charts"), Macmillan.

Lombardi, John, 1974, "Faculty Workload," ERIC Topical Paper No. 46.

A Faculty Load Nomograph

UNIVERSITY OF CALIF.
LOS ANGELES
JAN 21 1977
CLEARINGHOUSE FOR
JUNIOR COLLEGES